



SIMATIC S7-400, analog input SM 431, 8 AI, resolution 16 bit, resistor/PT100/Ni100 isolated, diagnostics alarm, 20 ms conversion time

Figure similar

Input current	
from backplane bus 5 V DC, max.	650 mA
Power loss	
Power loss, typ.	3.3 W
Analog inputs	
Number of analog inputs	8
• For resistance measurement	8
permissible input voltage for voltage input (destruction limit), max.	35 V; 35 V continuous, 75 V for max. 1 s (mark to space ratio 1:20)
Constant measurement current for resistance-type transmitter, typ.	1 mA
Input ranges	
• Voltage	No
• Current	No
• Thermocouple	No
• Resistance thermometer	Yes
• Resistance	Yes
Input ranges (rated values), resistance thermometer	
• Ni 100	Yes
— Input resistance (Ni 100)	> 10 000 ohms
• Ni 1000	Yes; Different characteristics selectable: Europe/U.S.
— Input resistance (Ni 1000)	> 10 000 ohms
• Pt 100	Yes
— Input resistance (Pt 100)	> 10 000 ohms
• Pt 1000	Yes
— Input resistance (Pt 1000)	> 10 000 ohms
• Pt 200	Yes
— Input resistance (Pt 200)	> 10 000 ohms
• Pt 500	Yes
— Input resistance (Pt 500)	> 10 000 ohms
Characteristic linearization	
• parameterizable	Yes
— for resistance thermometer	Pt100, Pt200, Pt500, Pt1000, Ni100, Ni1000; different characteristics selectable (Europe/U.S.)
Cable length	
• shielded, max.	200 m; 50 m with thermocouples and input ranges $\pm 80$ mV
Analog value generation for the inputs	
Integration and conversion time/resolution per channel	
• Resolution with overrange (bit including sign), max.	16 bit

• Integration time, parameterizable	Yes
• Basic conversion time (ms)	8 / 23 / 25 ms
• Integration time (ms)	20 ms at 50 Hz (entire module incl. wire break)
• Interference voltage suppression for interference frequency f1 in Hz	none/ 60 / 50 Hz
• Basic execution time of the module (all channels released)	8 ms; 8 / 23 / 25 ms

### Encoder

#### Connection of signal encoders

• for resistance measurement with three-wire connection	Yes
• for resistance measurement with four-wire connection	Yes

### Errors/accuracies

#### Operational error limit in overall temperature range

• Resistance thermometer, relative to input range, (+/-)	±1 °C
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#### Basic error limit (operational limit at 25 °C)

• Resistance thermometer, relative to input range, (+/-)	±0,2 °C
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### Interrupts/diagnostics/status information

Diagnostics function	Yes; Parameterizable
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#### Alarms

• Diagnostic alarm	Yes; Parameterizable
• Limit value alarm	Yes
• Hardware interrupt	Yes; Parameterizable

#### Diagnoses

• Diagnostic information readable	Yes; possible
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### Potential separation

#### Potential separation analog inputs

• Potential separation analog inputs	Yes; internal/external
• between the channels	No
• between the channels and backplane bus	Yes

### Isolation

Isolation tested with	500 V DC
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### Dimensions

Width	25 mm
Height	290 mm
Depth	210 mm

### Weights

Weight, approx.	650 g
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### Classifications

	Version	Classification
eClass	14	27-24-22-01
eClass	12	27-24-22-01
eClass	9.1	27-24-22-01
eClass	9	27-24-22-01
eClass	8	27-24-22-01
eClass	7.1	27-24-22-01
eClass	6	27-24-22-01
ETIM	10	EC001420
ETIM	9	EC001420
ETIM	8	EC001420
ETIM	7	EC001420
IDEA	4	3562
UNSPSC	15	32-15-17-05

### Approvals / Certificates

#### General Product Approval



[Manufacturer Declaration](#)

[Miscellaneous](#)



[China RoHS](#)



General Product Approval

EMV

For use in hazardous locations

[Metrological Approval](#)

[KC](#)



For use in hazardous locations

[EM](#)



[Type Examination Certificate](#)



Maritime application



[NK / Nippon Kaiji Kyokai](#)



Maritime application



[CCS \(China Classification Society\)](#)

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